

NUCLEAR MEDICINE SENIOR RESIDENCY

TRAINING REQUIREMENTS

(A) INTRODUCTION

Nuclear Medicine is the medical specialty that uses the tracer principle, most often with radiopharmaceuticals, to evaluate molecular, metabolic, physiologic and pathologic conditions of the body for the purposes of diagnosis, therapy and research.

The Nuclear Medicine Residency Programme is the clinical and radiopharmaceutical medical speciality that employs the radionuclides for diagnosis, therapy, research and also to evaluate metabolic, physiologic and pathologic conditions of the body.

The programme includes 2.5 years of seamless broad-based clinical nuclear medicine educational training which allows the resident to develop the skills, knowledge, and attitudes leading to proficiency in all domains of nuclear medicine clinical competency.

(B) PROGRAMME OVERVIEW

The Nuclear Medicine Residency Programme shall be a competency-based programme designed to meet specific outcomes in the 7 core competencies of patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, system-based practice and faculty development.

The Nuclear Medicine Residency Program is structured in such a way that the resident's clinical responsibilities increase progressively during training. At the completion of the training, residents are proficient in all areas of clinical nuclear medicine and are able to function independently as nuclear medicine consultant, plan and perform appropriate nuclear medicine procedures, interpret the test results, and formulate a diagnosis. The residents are qualified at the completion of the training to recommend therapy, capable of assuming responsibilities for patients care and develop a satisfactory clinical maturity, judgment and technical skill that will render them capable of independent practice of nuclear medicine.

(C) ADMISSION REQUIREMENTS

The entry routes for Residency Training in Nuclear Medicine are as follow.

1. Completed the local Internal Medicine Basic Specialty Training Programme (IM BST) /Internal Medicine Residency Programme (3 years) and must pass the relevant internal medicine exam; or
2. Completed the local Diagnostic Radiology Residency Programme (4 years) and obtained FRCR;
or
3. Completed the local Diagnostic Radiology Basic Specialty Training Programme (3 years) + Diagnostic Radiology Advanced Specialty Training Programme (2 years) and obtained FRCR/ M.Med (Diagnostic Radiology); or

4. For foreign-trained doctors who have undergone formal structured training in countries with equivalent training programmes (e.g. UK and US) and obtained equivalent qualification(s), and wish to enter Nuclear Medicine Senior Residency Programme, their applications will be reviewed on case-by-case basis.

Attainment of Dual Accreditation in Diagnostic Radiology and Nuclear Medicine

1. Completed IM BST/Residency (3 years) + NM AST/Senior Residency (2 years/2.5 years) + DR Residency (completion of 4 years) and passed the relevant required examination(s)
2. Completed DR Residency (4 years) + NM Senior Residency (2.5 years) and passed the relevant required examination(s)
3. Completed DR BST (3 years) + DR AST (2 years) + NM senior residency (2.5 years) and passed the relevant required examination(s)

(D) TRAINING SYLLABUS

Postings and rotation:

	NM residents (from IM track)	NM residents (from DR track)
NM residency training (Year 1 & 2)	7 months General Nuclear Medicine (SGH) 1 month Radiopharmacy (SGH) 5 months Therapeutic Nuclear Medicine (SGH) 5 months PET/CT (SGH) 1 month Nuclear Cardiology (NHCS) 5 months Cross-sectional imaging (SGH/NCCS) 0.5 month Small animal imaging (SHS Experimental Medicine Centre) 2.5 months Nuclear Medicine Physics & Nuclear Medicine Radiography (SGH) 3 months Nuclear Medicine (NUHS) Total: 30 months	7.5 months General Nuclear Medicine (SGH) 1 month Radiopharmacy (SGH) 8 months Therapeutic Nuclear Medicine (SGH) 6 months PET/CT (SGH) 1.5 month Nuclear Cardiology (NHCS) 0.5 month Small animal imaging (SHS Experimental Medicine Centre) 2.5 months Nuclear Medicine Physics & Nuclear Medicine Radiography (SGH) 3 months Nuclear Medicine (NUHS) Total: 30 months

7 core competencies¹

The training programme aims to achieve the desired outcomes in the 7 core competencies as follow.

1. Patient care
2. Medical knowledge
3. Practice-based learning and improvement
4. Interpersonal and communication skills
5. Professionalism
6. System-based practice
7. Faculty development

Competencies	NM Year 1	NM Year 2 & 3
<p>Patient care</p> <p>Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.</p>	<p>Residents must demonstrate competency in:</p> <ol style="list-style-type: none"> 1. Initial patient evaluation to include pertinent patient information relevant to the requested procedure using patient interview, chart and computer data base review, the performance of a focused physical examination as indicated, and communication with the referring physician 2. Selection of appropriate nuclear medicine procedures in bone, thyroid, hepatobiliary, and cardiac imaging; 3. Supervision of the performance of nuclear medicine procedures in bone, thyroid, hepatobiliary, and cardiac imaging as well as the preliminary review and interpretation of the resulting images; and, 	<p>Residents must demonstrate competency in:</p> <ol style="list-style-type: none"> 1. Recommending, planning, conducting, supervising, interpreting, and reporting diagnostic and therapeutic nuclear medicine procedures appropriate for the clinical problem or condition 2. Correlating the nuclear medicine procedure with clinical information, laboratory, and other procedural or imaging studies 3. Interpreting PET studies performed for non-oncological indications; 4. Therapeutic administration of radiopharmaceuticals, including patient selection, evaluating risks and benefits, determining the administered dose, patient identity verification, obtaining informed consent, documenting pregnancy

	<p>4. Therapeutic administration of radioiodine for benign thyroid disease, including: patient selection, evaluating risks and benefits, determining the administered dose, patient identity verification, obtaining informed consent, documenting pregnancy status, using administrative controls to prevent a medical event, complying with national regulations regarding medical use of radiopharmaceuticals, counseling patients and their families about radiation safety issues, and scheduling and performing post-therapy follow-up</p> <p>5. Selection of appropriate procedures(s) based on the referring physician's request and the patient's history;</p> <p>6. Selection of the appropriate radiopharmaceutical, dose, imaging technique, data analysis, basic supervisory skills, image presentation, and preliminary interpretation in the performance of parathyroid, gastrointestinal, infection, pulmonary, urinary tract procedures, and PET studies;</p> <p>7. Interpretation of PET studies performed for oncological indications;</p> <p>8. Preparation of radiopharmaceuticals, including preparing patient</p>	<p>status, using administrative controls to prevent a medical event, complying with national regulations regarding the medical use of radiopharmaceuticals, counselling patients and their families about radiation safety issues, and scheduling and performing post-therapy follow-up; and, interpreting the following:</p> <ul style="list-style-type: none"> • Musculoskeletal studies for benign and malignant disease • Endocrinological studies, including thyroid and parathyroid. Thyroid studies must include measurement of iodine uptake and dosimetry calculations for radioiodine therapy • Gastrointestinal studies, including transit studies, liver and hepatobiliary, bleeding, and Meckel's diverticulum • Infection studies, including gallium, labelled leukocytes, and bone marrow imaging • Oncology studies, including sentinel node localization, fluorodeoxyglucose (FDG), adrenal, somatostatin-receptor imaging and other agents as they become available • Neurological studies, including cerebral perfusion, cerebral
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	<p>doses and performing quality control measures; and,</p> <p>9. Therapeutic administration of radioiodine for thyroid malignancy, including patient selection, evaluating risks and benefits, determining the administered dose, patient identity verification, obtaining informed consent, documenting pregnancy status, using administrative controls to prevent a medical event, complying with national regulations regarding the medical use of radiopharmaceuticals, counseling patients and their families about radiation safety issues, and scheduling and performing post-therapy follow-up.</p>	<p>metabolism and cerebrospinal fluid. This should include studies of dementia, epilepsy, and brain death</p> <ul style="list-style-type: none"> • Pulmonary studies, including perfusion and ventilation for pulmonary embolus, right-to left shunts, and quantitative assessment of perfusion and ventilation • Urinary tract studies, including renal perfusion, function and cortical imaging, renal scintigraphy with pharmacologic interventions, and renal transplant evaluation • Cross-sectional imaging of the brain, head and neck, thorax, abdomen, and pelvis with CT in the context of SPECT/CT and PET/CT • Myocardial perfusion imaging with treadmill and pharmacologic stress, including patient monitoring, with special emphasis on electrocardiographic interpretation • ECG-gated ventriculography for evaluation of ventricular performance
<p>Medical knowledge</p> <p>Residents must demonstrate knowledge of established and evolving biomedical, clinical,</p>	<p>Residents should demonstrate basic knowledge of radiation safety; nuclear medicine instrumentation, including</p>	<p>Residents should demonstrate competence in their knowledge of all topics included in the didactic curriculum.</p>

<p>epidemiological and social-behavioural sciences, as well as the application of this knowledge to patient care.</p>	<p>quality control; nuclear medicine procedures, including bone scans, thyroid uptake and scans; parathyroid, gastrointestinal, infection, pulmonary and urinary tract; hepatobiliary scans; myocardial perfusion; gated ventriculography; radiopharmacy; nuclear medicine procedures, including radioiodine therapy for hyperthyroidism; radioiodine therapy for thyroid malignancy; positron emission tomography for oncologic indications; and cross-sectional imaging of the thorax, abdomen, and pelvis with CT in the context of SPECT/CT and PET/CT</p>	
<p>Practice-based learning and improvement</p> <p>Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.</p>	<p>Residents are expected to develop skills and habits to be able to meet the following goals:</p> <ul style="list-style-type: none"> • Identify strengths, deficiencies, and limits in one’s knowledge and expertise • Set learning and improvement goals • Identify and perform appropriate learning activities • Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement • Incorporate formative evaluation feedback into daily practice • Locate, appraise, and assimilate evidence from scientific studies related to their patients’ health problems • Use information technology to optimize learning • Participate in the education of patients, families, students, residents and other health professionals • Regularly obtain follow-up information, and correlate the clinical findings with their study interpretation • Evaluate their personal practice utilizing scientific evidence, best practices, and/or self-assessment programs or modules for practice improvement. This reflective process must be 	

	demonstrated as part of an individual learning plan in the Resident Learning Portfolio.	
<p>Interpersonal and communication skills</p> <p>Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals.</p>	<p>The residents should:</p> <ul style="list-style-type: none"> • Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds • Communicate effectively with physicians, other health professionals, and health related agencies • Work effectively as a member or leader of a health care team or other professional group • Act in a consultative role to other physicians and health professionals • Maintain comprehensive, timely, and legible medical records, if applicable 	
	<p>Residents must demonstrate competence by the completion of the NM1 year in preparing a preliminary basic nuclear medicine procedure report; and communicating the final procedure results promptly and clearly to the referring physician; preparing a complete and concise nuclear medicine procedure interpretation report; providing effective contributions to the interdisciplinary and clinical didactic conferences; and educating patients and their families in diagnostic and therapeutic nuclear medicine procedures.</p>	<p>Residents demonstrate competence by the completion of the NM2 year in: communicating the final procedure interpretation, an appropriate differential diagnosis, and any clinical, diagnostic or therapeutic recommendations; and supervising and teaching junior residents, residents from other services, and students on rotations in nuclear medicine.</p>
<p>Professionalism</p> <p>Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.</p>	<p>Residents should show:</p> <ul style="list-style-type: none"> • Compassion, integrity, and respect for others • Responsiveness to patient needs that supersedes self-interest • Respect for patient privacy and autonomy • Accountability to patients, society and the profession 	

	<ul style="list-style-type: none"> • Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
<p>System-based practice</p> <p>The resident must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.</p>	<p>Residents should:</p> <ul style="list-style-type: none"> • Work effectively in various health care delivery settings and systems relevant to their clinical specialty • Coordinate patient care within the health care system relevant to their clinical specialty • Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate • Advocate for quality patient care and optimal patient care systems • Work in inter-professional teams to enhance patient safety and improve patient care quality • Participate in identifying system errors and implementing potential systems solutions
<p>Faculty development</p>	<p>Residents must demonstrate effective coaching and mentorship of junior doctors in the department, which include the medical officers, and junior residents posted to the department from Diagnostic Radiology and Internal Medicine Programs. They are also expected to develop their teaching/presentation skills by presenting at journal clubs, local or regional conferences, and hospital teaching rounds. They may also be assigned teaching roles to technologists and nurses on selected nuclear medicine topics.</p>

Nuclear Medicine Modules

Six core Nuclear Medicine modules have been selected:

1. General Nuclear Medicine (with cross sectional anatomy)
2. Nuclear cardiology
3. Therapeutic nuclear medicine
4. Positron Emission Tomography (PET) (with cross sectional anatomy)
5. Nuclear medicine basic Physics
6. Radiopharmacy

Residents shall be assessed by their teachers / supervisors to have achieved the desired competency outcomes before being certified to have successfully completed the module. The formative assessment of competence within each module shall take the form of a series of mini- clinical evaluation exercises (mini-CEXs) and Direct Observed Procedures (DOPs).

Residents shall complete all the core training modules before being allowed to take the final exit examination. If the resident fails to fulfil the requirements set out for a particular module, the resident shall be required to re-do the module until the requirements as set out are met.

Quarterly reviews by the resident's supervisor shall be carried out to ensure that progress towards attaining training objectives and competencies is made.

Curriculum Organization and Resident Experiences

Residents must participate in a radiopharmacy rotation. The experience must include ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys; performing quality control procedures on instruments used to determine the activity of dosages, and performing checks for proper operation of survey meters; calculating, measuring, and safely preparing patient or human research subject dosages; using administrative controls to prevent a medical event involving the use of unsealed byproduct material; using procedures to safely contain spilled radioactive material and using proper decontamination procedures; and, administering dosages of radioactive drugs to patients or human research subjects.

The residents participate with appropriate supervision in the performance of nuclear medicine imaging and non-imaging procedures to include instrumentation quality control; participate in basic radiation safety and survey procedures.

Residents must participate in the stress component of myocardial perfusion exam; participate in radioiodine therapy for benign thyroid disease; participate with appropriate supervision in the performance of nuclear medicine procedures including bone scans, thyroid uptake and scans, hepatobiliary scans, and myocardial perfusion procedures; formulate a scholarly activity or research project and identify a faculty mentor for this activity during the NM1 year.

Residents must participate in a minimum of six months of CT experience. A minimum of four months must be obtained on a diagnostic radiology CT service. The remaining two months may be continued on the diagnostic CT service and/or may be combined with a rotation that includes PET/CT or SPECT/CT. This experience must be supervised by qualified faculty. Residents who have satisfactorily completed accredited diagnostic radiology program are exempted from the requirement.

The resident must maintain a Resident Learning Portfolio. This portfolio must be maintained by each resident, must be reviewed with the program director as part of the semiannual evaluation, and must include the following:

A. Patient Care:

The residents are required to document participation in the following nuclear medicine procedures.

1. At least 100 cases of oral administration of less than or equal to 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131, for which a written directive is required.
2. At least 30 cases of oral administration greater than 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131, for which a written directive is required.
3. At least 3 cases of parenteral administration of any beta emitter and 300 cases photon-emitting radionuclide with a photon energy less than 150 keV, for which a written directive

is required and/or parenteral administration of any other radionuclide, for which a written directive is required.

4. At least 100 stress myocardial perfusion studies, documentation including date, radiopharmaceutical, and type of stress (exercise or pharmacologic).
5. Documentation of participation in therapeutic procedures, including date, diagnosis, and dose of each therapy.
6. Interpreting and reporting a wide range of diagnostic procedures; for example a minimum number of 600 studies of the skeletal system, 300 studies of the cardiovascular system (inclusive of myocardial perfusion studies), 80 studies of the pulmonary system, 50 studies of the gastro-intestinal system, 150 studies of the urogenital system, 400 studies of the endocrine system, 50 studies of the lymphatic system, 30 cases of infection imaging, 10 studies of the central nervous system, 400 cases of PET/CT and 500 cases of CT examinations (including a reasonable distribution of CT of the neck, chest, abdomen and pelvis). These should include at least 25 pediatric nuclear medicine procedures per year.
7. Attendance of basic cardiac life support (BCLS) and advanced cardiac life support (ACLS) courses.
8. History taking and counseling of at least 200 patients undergoing PET/CT.

B. Medical Knowledge:

Documentation of:

1. Conference presentations, external courses and meetings attended, and self-assessment modules completed.
2. Compliance with regulatory-based training requirements.
3. Performance on the annual in-training examination.

C. Practice- based Learning and Improvement:

Annual resident self-assessment and learning plan.

D. Interpersonal and Communication Skills:

Formal faculty evaluation of report quality.

E. Professionalism:

Documentation of the compliance with institutional and departmental policies and status of medical license. The Patient satisfaction survey and Peer assessment also evaluated for the professionalism.

F. System based Practice:

Documentation of participation in identifying and implementing potential systems solutions.

Scholarly Activities

Documentation of scholarly activity, such as publications, presentations; any additional materials requested by the program director; and, submission of a scholarly activity to the program director for evaluation by the completion of the NM3 year.

1. The curriculum must advance residents' knowledge of the basic principles of research, including how research is conducted, evaluated, explained to patients, and applied to patient care.
2. All residents must participate in a scholarly project under faculty supervision. The scholarly project should take the form of laboratory research, clinical research, or the analysis of disease processes, imaging techniques, or practice management issues. The results of such projects must be published or presented at institutional, local, regional, or national meetings, and included in the Resident Learning Portfolio. The program must specify how each project will be evaluated.
3. The sponsoring institution and program should allocate adequate educational resources to facilitate resident involvement in scholarly activities.

There must be a dedicated formal didactic lecture schedule that indicates the specific date and time of each lecture, the topic of the lecture, the individual presenting the lecture, and the duration of the lecture.

Residents must attend the regularly scheduled didactic lectures. The topics must include:

1. Diagnostic use of radiopharmaceuticals: clinical indications, technical performance, and interpretation of *in-vivo* imaging of the body organs and systems
2. Using external detectors and scintillation cameras, including single photon emission computed tomography (SPECT), single photon emission computed tomography – computed tomography (SPECT/CT), positron emission tomography (PET), and positron emission tomography – computed tomography (PET/CT)
3. Correlation of nuclear medicine procedures with other pertinent imaging modalities; exercise and pharmacologic stress testing: the pharmacology of cardio-active drugs and physiologic gating techniques
4. Non-imaging studies: training and experience in non-imaging procedures, such as radiolabeled antibody preparation, uptake measurements, and *in-vitro* studies; therapeutic uses of unsealed radiopharmaceuticals in the treatment of benign and malignant disorders: patient selection and management, including dosimetry, dose administration, toxicity, and radiation protection considerations
5. Fundamentals of imaging molecular targets, processes and events and existing and emerging molecular imaging techniques, particularly as they relate to current clinical practice.

(E) SUPERVISION AND WORK HOURS OF RESIDENTS

I. Supervision

All residents will be supervised by a designated supervisor. The ratio of all teaching faculty to residents should be 1:1. The number of core clinical faculty to resident ratio must be no less than 1:6 for surgical subspecialties and no less than 1:2 for internal medicine-related subspecialties. 20% of resident's time must be protected for training.

Supervision of Residents

In the clinical learning environment, each patient must have an identifiable, appropriately-credentialed and privileged attending physician (or licensed independent practitioner as approved by each Review Committee) who is ultimately responsible for that patient's care. Only licensed physicians who are credentialed to perform nuclear medicine procedures may have primary responsibility for the nuclear medicine aspects of patient care. This information should be available to residents, faculty members, and patients. Residents and faculty members should inform patients of their respective roles in each patient's care.

The program must demonstrate that the appropriate level of supervision is in place for all residents who care for patients. Supervision may be exercised through a variety of methods. Some activities require the physical presence of the supervising faculty member. For many aspects of patient care, the supervising physician may be a more advanced resident or fellow. Other portions of care provided by the resident can be adequately supervised by the immediate availability of the supervising faculty member or resident physician, either in the institution, or by means of telephonic and/or electronic modalities. In some circumstances, supervision may include post-hoc review of resident-delivered care with feedback as to the appropriateness of that care.

II. Work Hours

Work hours can be defined as all clinical and academic activities related to residency training. Work hours must be limited to 80 hours per week, averaged over a month, including all on-calls. Residents must be allowed 1 day (i.e. 24 continuous hours) in 7 days free from all clinical administrative and academic responsibilities, averaged over a month. On-call hours must not exceed 24 hours. Work hours must be reported in the designation system (e.g. New Innovations) and tracked by the Programme Director.

(F) ASSESSMENT AND FEEDBACK

I. Log of clinical experience

All residents are expected to keep a log of their clinical experience in the designated case log system.

II. Assessment

The supervisor's evaluation of the resident should be performed at the end of every rotation using the designated form and then submitted to the RAC for review.

RESIDENT EVALUATION

Formative Evaluation

The faculty must evaluate resident performance in a timely manner during each rotation or similar educational assignment, and document this evaluation at completion of the assignment. The program must:

1. Provide objective assessments of competence in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems based practice
2. Use multiple evaluators (e.g., faculty, peers, patients, self, and other professional staff)
3. Document progressive resident performance improvement appropriate to educational level
4. Provide each resident with documented semi-annual evaluation of performance with feedback
5. Residents must participate in the annual in-training examination. The results of this examination must be used only to identify deficiencies in knowledge and to assist in developing a remediation plan.
6. Evaluations of resident performance must be accessible for review by the resident, in accordance with institutional policy

Summative Evaluation

The program director must provide a summative evaluation for each resident upon completion of the program. This evaluation must become part of the resident's permanent record maintained by the institution, and must be accessible for review by the resident in accordance with institutional policy. This evaluation must document the resident's performance during the final period of education, and verify that the resident has demonstrated sufficient competence to enter practice without direct supervision.

III. Feedback

Residents should perform a yearly evaluation of teaching faculty and the training programme using the designated forms. These forms must be submitted to the RAC and kept absolutely confidential. *(KIV to engage IT systems for the provision of the survey)*

IV. Examinations

Formative

In-training examination (ITE)

Residents can progress to next year of training if they did not pass the ITE (which is a formative assessment).

Recommended readings

Residents are strongly encouraged to read the following recommended textbooks as part of the residency and the preparation for exit examination.

1. Simon R. Cherry, James A. Sorenson, Michael E. Phelps. Physics in Nuclear Medicine. Saunders; 4 edition (April 26, 2012)
2. Fred A. Mettler Jr, Milton J. Guiberteau. Essentials of Nuclear Medicine Imaging. Saunders; 6 edition (January 25, 2012)
3. Harvey A. Ziessman, Janis P. O'Malley, James H. Thrall. Nuclear Medicine: The Requisites. Saunders; 4 edition (April 4, 2013)
4. Gary J.R Cook, M. N Maisey, K.E Britton, Vaseem Chengazi. Clinical Nuclear Medicine. CRC Press; 4 edition (November 24, 2006)
5. Peter J. Ell, Sam Gambhir. Nuclear Medicine in Clinical Diagnosis and Treatment: 2-Volume Set. Churchill Livingstone; 3 edition (August 9, 2004)

(G) CHANGES IN TRAINEESHIP PERIOD AND LEAVE OF ABSENCE

I. Changes in Training Period

Residency should be continuous. If a training programme is interrupted for any reason whatsoever, the RAC may at its discretion, require the resident to undergo a further period of training in addition to the minimum requirements of the programme or terminate the residency altogether. All residents are required to conform to the residency training plan as approved by the RAC and complete all the exit and training requirements within the maximum candidature.

II. Leave of Absence

All residents are to comply with the prevailing MOH policy on Leave of Absence.

III. Overseas Postings

Overseas attachment during Senior Residency training is not permitted with the exception of Radiation Oncology and Neurosurgery (refer to JCST Circular 114/14).